

DOCUMENT RESUME

ED 228 172

SP 021 960

AUTHOR Doll, William E.; Garzone, Lio
TITLE Preparing for the Post-Industrial Society: Oswego's
New Direction in Teacher Education.
PUB DATE 23 Feb 83
NOTE 22p.; Presented at the Annual Meeting of the American
Association of Colleges for Teacher Education
(Detroit, MI, February 23, 1983).
PUB TYPE Speeches/Conference Papers (150) -- Information
Analyses (070) -- Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Curriculum Development; Elementary School Teachers;
Field Experience Programs; *Foundations of Education;
Higher Education; *Methods Courses; Preservice
Teacher Education; Social Change; Teacher Education
Curriculum; *Teacher Education Programs; *Teaching
Experience
IDENTIFIERS *State University of New York Coll at Oswego

ABSTRACT

The new elementary education program for prospective teachers at the State University of New York at Oswego focuses on the structure of human learning. The program has three tracks for students to choose from, each consisting of: (1) the foundations semester; (2) the unit; and (3) field experience. In the foundations semester, students work on finding the structure underlying each subject and then on using those structures for curriculum purposes. During the unit semesters, time is spent analyzing already existing curriculum units to see how closely they agree with the structure inherent in the field and in the learner. It is not, however, until the field experience that the theoretic is finally integrated with the practical for the student. Students are in the classrooms from the beginning of their education classes, first observing, then assisting and finally teaching. Another feature which characterizes the program is the fact that there is not only continuity within the program itself but also between the program and the liberal arts education offered by the college. (JM)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED228172

PREPARING FOR THE POST-INDUSTRIAL SOCIETY:
OSWEGO'S NEW DIRECTION IN TEACHER EDUCATION

AACTE
Detroit, Michigan
February 23, 1983

William E. Doll
Elementary Education
SUNY-Oswego

Lio Garzone
Elem Ed
SUNY Oswego

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as
received from the person or organization
originating it.

☐ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official NIE
position or policy.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

Lio Garzone
William E. Doll Jr.

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

SP 021 960

In the decade since Daniel Bell (The Coming of Post-Industrial Society, 1973) has brought the word and concept "post-industrial" to our attention, his forecasts of the future have been amazingly accurate. No longer is America's industrial might and power coming from its steel and chemical smokestacks; rather we are looking to our computer technology and electronic wizardry for future economic leadership and growth. IBM and Bell Telephone have replaced U.S. Steel and Dupont as symbols of America's future. Our power is no longer represented in terms of engine size, but in terms of "chip" size; the former was measured in terms of largeness, the latter is measured in terms of smallness. With this shift from smokestacks to circuitry has come a concomitant shift from blue-collar, industrial jobs to white-collar service and professional occupations. Today less than 4% of the work force is engaged in agriculture; by the year 2000 less than 4% of the work force may be engaged in industrial production (Bell, pgs. 124-125). The ages of automation and leisure are upon us. The whole notion of full employment will have to be drastically redefined in the coming decade. Naturally all of these changes will have profound and sudden effects upon the schools and school curricula. Not the least of these will be the fact that it will be the schools and universities, not the market place, which will act as the center for innovation and change in our society. Already we see this in the relationship now being formed between universities and business in the area of computer technology and biogenetics; relationships impossible to conceive a few years back. In fact, of all of Daniel Bell's predictions in the early 1970's that one seemed the most far fetched. But now it is obvious that universities are no longer ivory towers, removed from the real world of economics and business. Even grade school children are now acquiring competence in computing, upon which their future economic survival will depend. To a great degree schools were extraneous to an industrial society, places where children and youth were required to spend time, lest their presence in the job market lower drastically the wages of

the blue-collar worker. All this will change shortly, and is changing now. Schools will play a central role, the central role, in the development of post-industrial society.

All the foregoing represents aspects of the post-industrial society, especially as Daniel Bell sees that society. However, advanced technology, automation, leisure time, service-oriented occupations and professions, aspects of a post-industrial society, are vitally important, but they do not form the essence or heart of that society. The heart lies in the development of the theoretic; for it is the theoretic which will be the "matrix of innovation" (p. 344), or the "axial principle" (p. 117, passim) guiding the post-industrial era. Bell believes that broad social and economic movements -- the agricultural, the industrial, the post-industrial-- are organized around axial principles: those "organizing frames around which other institutions are draped" (p. 10). For agricultural society the axial principle is traditionalism: the passing on of skills, rituals, and concepts from one generation to the next. In Ireland a few summers back my wife and I rented a country cottage for a month. Periodically a local farmer would plow the field next to our cottage with his horse. Always his young son, approximately 12 years of age, would walk behind the father, literally planting his feet in his father's footsteps. One day grandfather showed up. He took the plow, father walked behind grandfather, son walked behind father. Three men on one plow, one working, two following; here traditionalism, not efficiency, was the governing or axial principle.

In industrial society, efficiency of production or increase in economic growth has been the axial principle. All has been geared (to use an industrial term) to increased production. Even intelligence (I.Q.) has been defined in terms of productivity within set times. Frederick Taylor, the father of the efficiency movement, would be overjoyed to see how central his time and motion studies have become to industrial America and the schooling it spawned (Callahan, Education and the Cult of Efficiency,

1962; Tyack, The One-Best System, 1974). The method of increasing productivity that Taylor used, and which has permeated all of industrial America, is quite simple: to standardize or regulate all actions, and then to increase by small increments the workload. Over time this method has produced astonishing results in increased, and hence less expensive, products. Much has been written about worker alienation, the mechanization of humans, the loss of craftsmanship, and the sense of stress under this sort of regime. What has not been focused on, and what Bell does focus on, is the underlying sense of simplicity pervading this system. This is not a "thinking man's" system; in fact, thinking human beings are actually a threat to the system: a point Spiro Agnew was continually making during his tenure as Vice-President. Bell points out that the technology which made America an industrial leader in the nineteenth century was itself amazingly simple, so simple that many Europeans were disdainful of American inventions, and Bell himself calls men like Bessemer, Edison, McCormack, and the Wright brothers, "talented tinkerers."

(The major industries were) mainly the creation of inventors, inspired and talented tinkerers who were indifferent to science and the fundamental laws underlying their investigations. Kelly and Bessemer were unaware of the true microstructure of steel. Alexander Graham Bell was in Clerk Maxwell's opinion a 'mere elocutionist.' Edison's work on 'etheric sparks' was undertaken outside the theoretical research in electromagnetism and even in hostility to it (p. 20).

The epitome of this simplicity, of course, is represented by the Wright brothers who produced the first airplane with bicycle parts in a bicycle shop.

When one reflects on the sense of simplicity underlying the industrial

era two pedagogical points immediately stand out. The first is a framework for evaluating school curricula, for helping us understand why a man as eminent and scholarly as William Torrey Harris, second U.S. Commissioner of Education, did not list scholarship or intellectual growth as prime objectives of schooling, but preferred to state that "the cardinal virtues of schooling are four: regularity, punctuality, industry, and silence" (Tyack, p. 50). The second point is that such an evaluational framework is no longer applicable, either to society or to schools. We have left the realm of the simple and moved into the complex. Here it will be the theoretic which will dominate, not only our concept of schooling, but all of post-industrial society. Space exploration, unlike the first airplane, must come out of theoretics. As Bell says "the centrality of theoretical knowledge" will be the axial principle governing post-industrial society.

Obviously this change from the simple and practical to the complex and theoretic will place enormous demands on schools, teachers and administrators. The demands may be as great, or even greater, than those placed on these same groups at the beginning of the century, when America moved from an agrarian to an industrial society. Preparation for this change needs to be made now, especially by those of us training teachers, who themselves will be training the leaders and citizens of the twenty-first century. The greatest challenge we face is not merely the recognition and development of the theoretic, but an awareness that with "the centrality of the theoretic" the very character and structure of knowledge changes.

In the post-industrial society, what is crucial is not just a shift from property or political criteria to knowledge as the base of new power, but a change in the character of knowledge itself....(where knowledge can be codified) into abstract systems of symbols that can be translated into many different and varied circumstances (Bell, pgs. 343 and 347).

On the one hand what is meant in this quote is nothing more than the fact that computers can now create alternative scenarios unimagined before. We can now produce not one or two alternatives but all permutations and combinations; we can "construct a 'tableau entire' for the arrangement of decisions and choices." On the other hand Bell is pointing beyond an increase in alternatives to a new way of viewing knowledge, a way which looks at knowledge not in linear terms but in structural terms. Such a view sees knowledge not as a sum of past accumulations, but as a living body of integrated connections. Here knowledge generates multidirectional possibilities.

This notion of the character of knowledge changing from a linear to a structural ordering is both a key and a difficult concept. It forms the basis of curricular foundations, the keystone upon which Oswego's new teacher education program is built, and it contradicts thinking which has been "natural" to us for hundreds of years, going back in time at least until René Descartes. A linear way of viewing knowledge is one that breaks up knowledge into bits (or "bytes"): pieces of information, semi-isolated from one another, strung together in a sequential fashion. This view is readily found in most any school textbook; it is epitomized in elementary school arithmetic texts which require addition to be done before, and apart from, subtraction, and both of these to precede multiplication. This same linear approach pervades psychological experimentation where independent variables are isolated from dependent variables, hence producing a "causative effect"; it also appears in computers with their bytes of information, strung together serially. In short, it pervades our culture, our society; it is our way of thinking about thinking. There are signs, though, that this is changing. Computers and data processing machines are overwhelming us with bits and bytes of information. It is not more information we need, but ways to organize

information; ways that will incorporate information into structural frameworks. This, says Jerome Bruner (1973), is the human being's greatest asset: the ability to categorize, organize, structure information into systems, sub-systems, and superordinate systems. Jean Piaget (1971, 1980) has proposed using an interactive, biological, systemic model, instead of the present mechanistic, reductionist, linear model, to describe and develop this human capacity of organization. Urie Bronfenbrenner (1971) has called upon psychologists to develop a new method of experimentation and evaluation: an "ecological" method which adopts a systemic approach, and organizes not in a linear manner, but in an interactive, reciprocal, ecological manner. Here variables are seen not in isolation but in systemic interaction. Goodlad (1979) has called upon educators to adapt this framework to curriculum; and I, (Doll, 1979, 1983) have looked at curriculum implications of such adaptation. Such an approach to knowledge will, of course, necessitate a major change in schooling, and concurrently a change in teacher education.

By its very nature an approach to knowledge that emphasizes the theoretic and the systemic must also emphasize the structural. That is, not only will the content of knowledge be stressed (its bits), but also the ways knowledge is organized: its connections, its interconnections, its history, its network of logical (and psychological) relations. Such a change will force curriculum to consider the ways experts organize, those Kuhn (1970) calls the leaders or paradigm makers of a field; and the ways learners organize, those who are still novices in a field. The instructional task becomes, then, as Bruner (1960) points out, one of meshing or integrating the structures of the field with the structures of the learner. While this can be done, it means a new type of teacher: a teacher who will be prepared to be a curriculum maker not just a curriculum follower. Such preparation can occur through a structural

approach: to knowledge, to the curriculum, to the learner. This structural approach is the foundation on which Oswego's teacher education program is based.

The Oswego Program

The foregoing has been an exploration of the need for a new program, and a justification of the new program's focus. The following will be a description of the program itself. Appendix A outlines the program, and Appendix B highlights the program's most unique feature: the courses in Curricular Foundations. The program has three tracks: the Generalist, Early Childhood, and Middle School. Students choose one of these tracks. Early Childhood and Middle School together account for 20% to 25% of each year's graduating class. As specialized areas these two tracks are particularized variations of the Generalist track. Their major differences occur in the methods and student teaching components. Notation will be made of these differences, but unfortunately space does not allow a full description of these programs. Each is worthy of fuller description.

As Appendix A shows, the Oswego program is three semesters of professional preparation (44 hours) in the junior and senior years, encased within four years of a liberal arts education. The three semesters are foundations, methods, and student teaching. This sequence and professional preparation within a liberal arts education is not what distinguishes Oswego's program. What does so distinguish it from other programs is the concept of curricular foundations, and the role these foundations play within the program. However, the courses comprising curricular foundations should not be looked at in isolation, but as part of an integrated whole. In short, they should be viewed systematically and integratively. Particularly, they should be viewed in conjunction with the four features which characterize the Oswego program: (1) the foundations semester; (2) the unit; (3) field experiences; and (4) continuity within the program, and between the program and the liberal

arts education offered by the college.

The Foundations Semester:

This semester is the first one in the program. It is the key semester in the sense that here are begun the issues the prospective teacher will wrestle with, define, and develop during the program. The 12 credit hours in this semester are apportioned as follows: four to educational foundations, eight to curricular foundations. Together they make a whole, integrating the structures of the learner with the structures of the disciplines to be taught - Appendix B.

Educational Foundations focuses heavily, if not exclusively, on ways learners, especially young learners, learn; and on the effects of school instruction on these learning patterns. The thrust here is not on what individuals can or should learn, but on ways or patterns in which they do learn. In short, the emphasis is on the structures of human learning. With such an emphasis it is only natural that Piaget (structures of children's thought processes) and Bruner (the effect of schooling or instruction on these processes) would be emphasized. Presently works by Skinner, Dewey, Piaget, and Bruner are read. The intent is not to develop an ideological pedagogy (although the notion of structuralism might serve as such) but to have students read the pertinent and theoretical writings of authors making major contributions to the field of human learning, especially children's learning. In fact, it is possible to argue, as does Bruner (1960), that the act of teaching involves blending the structures of the disciplines with the structures of the learner.

At each stage of development the child has a characteristic way of viewing the world and explaining it to himself. The task of teaching a subject...is one of representing the structure of that subject in terms of the child's way of viewing things (p. 33)

Piaget has done a superb job in helping educators understand "the child's way of viewing things." What now needs to be done, and what curricular foundations begins to do, is to understand the structure of the subjects taught. It is through understanding these structures that the teacher will be able to unite the young learner with the subject. Such a union is necessary if the learner's powers are to be developed, if the school subjects are to be understood in more than a superficial way, and if the theoretic is to be grasped.

In the elementary school, K-6 or K-8, the subjects taught are generally arithmetic, English (or language arts), science, and social studies. This means that the structures comprising the fields of mathematics, language, science, and social science are the ones studied. The structures of these fields can be defined as a collection of those fundamental ideas, basic principles, and essential themes which give intellectual coherence and validity to these fields. As such, these structures emerge from studying the field's history, its problems, its methodology, its characteristic "ways of thinking." While structures are important to a field, forming as they do the basis of the field, they are always more covert than overt. As Thomas Kuhn (1970) points out, practitioners in a field learn of that field's problems, methodology, and characteristics indirectly: by studying in the field as apprentices to those who were themselves apprentices. This indirect and tacit way of learning a field's structures works adequately with those able to immerse themselves in a field; they acquire a sense of the field without ever having to define the field consciously. But teachers have a different perspective; they must teach that which they don't practice, that in which they are not immersed as practitioners. Elementary school teachers have the further problem of teaching charges whose own intellectual constructions are not yet sufficiently mature to understand the structures of the fields being

taught. Thus the elementary school teacher must be doubly knowledgeable: of the field's structures, and of the learner's emerging structures.

In the four curricular foundations courses there are two foci: one, finding the structures underlying each subject (arithmetic, language arts, science, social studies), two, using these structures for curriculum purposes. This second focus is accomplished by comparing structures among subjects, by integrating the structures discovered in curricular foundations with those discussed in educational foundations (meshing the structures of the subject taught with the structures of the learner), and by utilizing both of these structures to evaluate curriculum materials, especially commercial textbooks and state education department guidelines.

As Appendix B shows it is possible to break up human thinking into the four subject areas taught in elementary school, and to assume that each of these areas has its own characteristic ways of thinking. Thus, mathematics is characterized by the logical, the abstract, the rational; its methodology is the deductive and a priori; its evaluative criterion is internal consistency. Science is characterized by the empirical, the practical, the hypothetical; its methodology is the inductive and problematic; its evaluative criterion is predictability. Language and the social sciences are harder to categorize because each is a composite title covering a broader, more varied, and less integrated set of fields. Nonetheless it is possible to say that language is characterized by the aural and the oral, the metaphoric or imagistic; its methodology is neither deductive nor inductive, but dialogic and interpretive; its evaluative criterion is neither internal consistency nor predictability, but aesthetic quality. As Elliot Eisner (Cognition and Curriculum, 1982) states, these foregoing three ways of knowing may be summarized as: (1) the logico-mathematical, (2) the scientific-empirical, (3) the mytho-poetic. Each way of knowing, or viewing the world, brings its own concept of curriculum, its own

methodology or research, its own definition of competence, and its own concept of mind.

An equally idiosyncratic way of knowing, of course, is true for the social sciences, the fourth field studied in the elementary school curriculum. This broad and amorphous field can be characterized in terms of the personal or existential, the cultural, the valuative and the normative. Its methodology, however, is quite impersonal, being that of statistical analysis, with its evaluative criterion being conformity to, or deviation from, a norm. The field, though, has always been plagued by varying definitions of the norm, and more than a bit bothered by the incongruity of using an impersonal methodology on that which is inherently personal. It is a field still in search of its identity. While it is impossible to assess just what direction the social sciences will take in regard to methodology and evaluation it can be asserted that the notions of public forums and an awareness of "the other," advocated by Bell and others, do seem to offer promise. At the very least these concepts provide a methodology and an evaluative criterion in keeping with, and not in opposition to, the personal and the existential.

Each of these four fields brings its own pedagogic problems. In mathematics, one of the main problems is helping the young learner transform his personal constructs into logical structures by moving from a view of arithmetic as counting to a view of mathematics as logical abstractions. This move or transformation is one from the real and tangible to the ideal and abstract. It is an extremely difficult move to make, one few curricula attempt; yet it is a necessary move if young learners are to think mathematically; if they are to acquire a math sense. The same is true of scientific thinking. If the learner is to acquire a sense of the scientific, then the learner needs neither to memorize the steps of the "scientific method," nor copy written-out formalized procedures. Rather that learner

needs to wrestle actively with both separating and integrating the subjective with the objective, with finding ways for using models as heuristic fictions -- as devices for ordering the world perceived, that such a world might be better controlled.

As might be expected the pedagogic problems associated with language arts and social studies are more diverse. To the degree that language arts is grammar and linguistics it will draw upon the logical and mathematical, expressed in mathematical reasoning. To the degree that language arts is metaphor, in all its imagistic richness and fullness, then its particular pedagogic problems will revolve around developing what Eisner calls a sense of "connoisseurship": the ability to make critical, interpretive and aesthetic judgments.

Social studies is concerned, essentially, with what it means to be human; helping young learners understand, evaluate, develop their humanity. As such it is concerned with the dynamic interchanges of individuals, groups, societies, cultures. The pedagogic problem this subject faces is that of helping individuals develop their humanity--in terms of value, norms, belief systems--without either imposing these standards, nor letting them emerge unexamined. Such a dual, and sometimes contradictory, thrust requires great skill and empathy on the part of the teacher, for it involves treading the thin line between guidance and force, development and imposition. Through a dialogic relation between an individual and society, the individual will hopefully come to realize and appreciate the right and values of both without allowing either to dominate the other.

The Unit:

The foregoing has been a description of the theoretic base underlying the Oswego program. The practical dimension comes with the unit. In the foundations semester, the first of three comprising the program, and especially in the curricular foundations courses, a good deal of time is

spent on analyzing curriculum units in both commercial textbooks and in guide-lines or syllabi from the State Education Department. The intent here is to look at these units with a critical eye, and assess how closely they agree with the structure inherent both in the field, and in the learner. Is the young learner being taught the structural principles underlying the four subjects of arithmetic, language arts, science and social studies? Is the child learning in a manner which will develop his own patterns of organizations - his own structures?

In the foundations semester work with the unit is basically analytic; with the prospective teacher suggesting modifications and revisions to bring the commercial material into closer harmony with the field's structural base. In the methods semester these embryonic units are developed into working lessons, and tried out in the classroom. Refinements on the unit are made in terms of both curricular and instructional methodologies. In student teaching, this unit, by now well developed, becomes the centerpiece of the student's teaching. In this manner the prospective teacher uses the unit as a vehicle to move from the theoretic to the practical; and with three semesters of analysis and application of the unit the prospective teacher has ample time to work on, and refine, ideas about teaching arithmetic, language arts, science, and social studies. The program's motto is "The Teacher as Decision-Maker," with the unit being the vehicle by which the teacher becomes just that.

Field Experience:

Obviously there needs to be, and is, a great deal of field experience in the program. The theoretic needs to be integrated with the practical, and the prospective teacher needs much time to work on and refine units. The nature of child learning, the role of the school as a social institution, and the development of curricular units become the three foci around which this integration occurs. 35% to 40% of the program is devoted to practical

experience, with this occurring in each of the semesters. In the foundations semester prospective teachers spend one afternoon per week in the schools, observing how classrooms work and analyzing how children think. In the methods semester a full day per week is spent in the schools, participating in all the activities of the school and applying, refining the developing units. Student teaching, of course, is for a full semester with total time spent in the classroom. This tri-part and progressive approach gives the prospective teacher an opportunity to try various teaching situations -- special education, music, art, reading, higher and lower grades -- and continually allows for integration between the theoretic and the practical.

Continuity and Integration:

There is no way a three semester program could accomplish all this program is designed to accomplish. Developing the theoretic, integrating it with the practical, studying the structure of four disciplines and of children, analyzing curriculum guidelines and textbook materials in the four disciplines plus reading, preparing, revising, and applying units, plus spending one semester student teaching is more than could be accomplished within 43 semester hours spread over one and one-half years. The answer lies rather in integrating these hours within the broader framework of a four-year college experience, and providing a high degree of continuity between the courses in arts and science and those in professional education. This continuity is achieved by integrating the professional sequence with general education requirements, with cognates, and with concentrates.

While the general education requirements of approximately 40 semester hours are not designed for Elementary Education majors per se, they do emphasize reading, writing, arithmetic and the history of ideas. These are the basics, the building blocks as it were, of the prospective teacher's educational foundations. The first semester of the program, the foundations semester, builds directly upon this general education component; in fact,

some general education courses are taught in the education department.

The cognates are even more closely integrated. Existing in the areas of health, mathematics, and psychology these courses are specifically designed for elementary and middle school teachers. They are often the product of joint, inter-departmental committees, and sometimes are taught by members of the education department.

Concentrates are a feature unique to Oswego and illustrative of its long reputation as an outstanding college of teacher education. Every elementary education major must concentrate in some academic area: art, history, language, mathematics, music, psychology, science, etc. This concentration is taught exclusively by the academic departments but is composed of 24 semester hours of courses agreed upon by both the academic department involved and the education department. Again, many of the concentrate courses are tailor-made for elementary education students. In this manner the academic is integrally connected with the professional, the theoretic with the practical. Such a foundation is necessary, conducive and supportive to the teacher as decision-maker and curriculum-builder.

Finally the student has the opportunity to minor in reading education, and to take six hours of special activities in such areas as micro-computers, working with the handicapped, talented and gifted, and outdoor education. Again, these are often courses taught in other departments but designed for elementary education majors.

SUMMARY

In this paper Oswego's new Elementary Education program for prospective teachers has been presented, along with the rationale for such a program. The post-industrial society requires a new type of teacher, one who can deal with a rapidly changing and theoretically oriented world. The department believes a structural approach to knowledge and the integration

of the theoretic with the practical are keys to producing such a teacher. Thus the Oswego program has a series of new courses, curricular foundations, a high degree of integration between the college classroom and the school classroom, continuity throughout the program via work on the curricular unit, and strong relationships with other departments in the college.

So far the students are surprised, delighted, and hard-working. They are surprised at how much knowledge and preparation a teacher must have; they are delighted with the preparation they are receiving, they are hard-working to make that preparation meaningful. The program is a challenging one, academically and personally; it is one designed to produce a quality teacher in a changing and demanding society.

Appendix A

General Education

-39 hours

Skills

English - 6 hrs.
Math - 6 hrs.
Humanities - 9 hrs.
Social Science - 9 hrs.
Natural Science - 9 hrs.

Major - By Semester (Jr. and Sr. years)

-44 hours

I	Educational Fdrs.	4 hrs.	
	Curricular Fdns.	8 hrs.	Foundations
	Generic Methods	4 hrs.	
II	Practicum	2 hrs.	Methods
	Reading	3 hrs.	
	Student Teaching	14 hrs.	
III	Field Based Reading	3 hrs.	Student Teaching
	Electives	6 hrs.	

Cognates

-9 hours

Psychology 6 hrs.
Math 3 hrs.

Concentrate

-24 hours

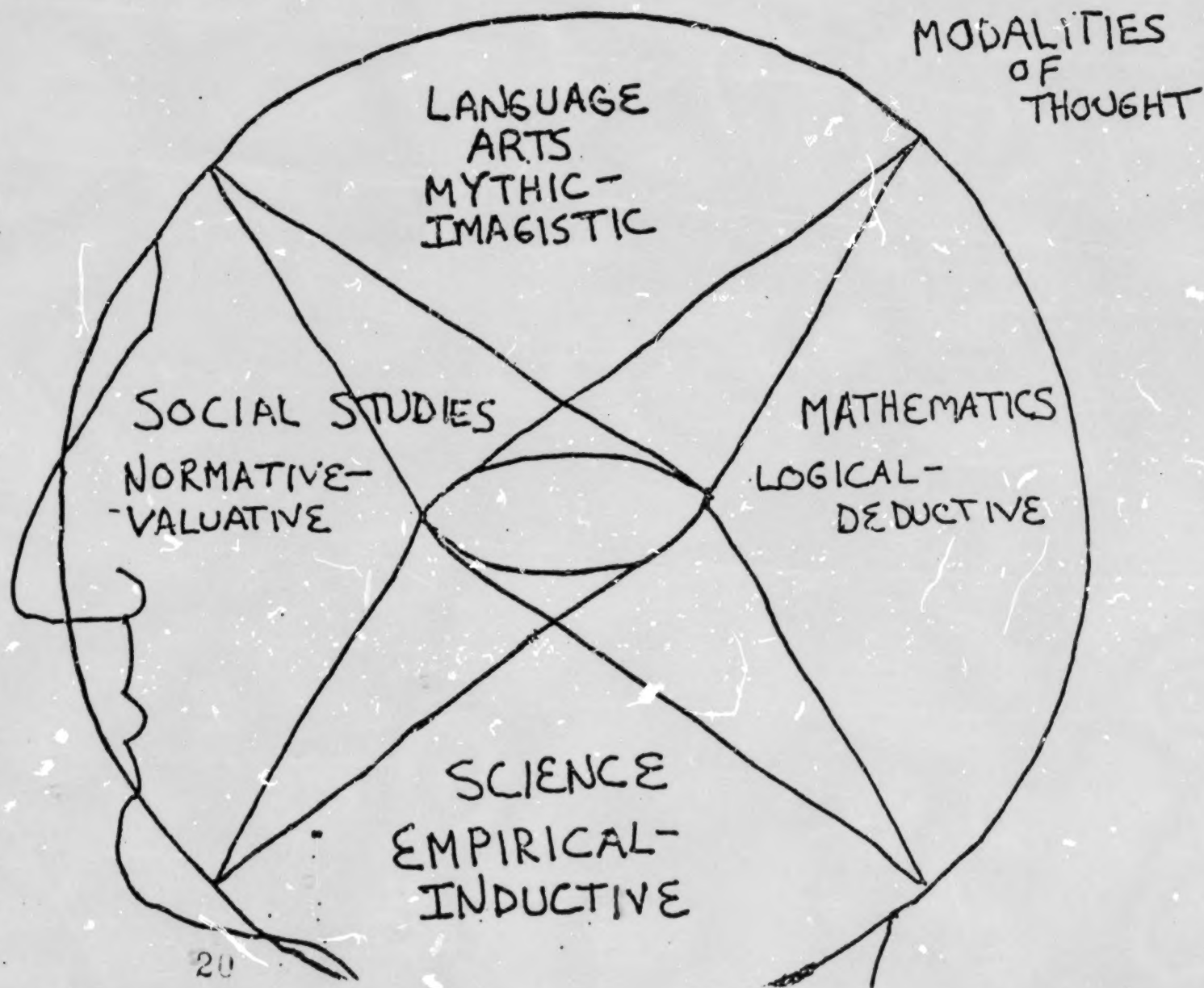
8 courses in an academic discipline. These courses are worked out cooperatively between the sponsoring department and Elementary Education.

Free Electives

-6 hours
-122 hours

Typically this number is 18 to 24, due to "double-countings" among Concentrates, Cognates, and General Education.

The above program is the Generalist track (N-6). Those specializing in the Early Childhood track (N-3 emphasis, N-6 certification) spend their full senior year together combining methods with student teaching in a unique, integrative manner. All education electives are combined within this senior year package. Those specializing in the Middle School track (5-9 emphasis, N-9 certification) have 6 more hours of academic concentration in their chosen field of study, special courses in adolescent psychology, and a workshop preparing them for middle school teaching.



References

- Bell, Daniel. The Coming of Post-Industrial Society, New York: Basic Books, Inc., 1973.
- Bronfenbrenner, Urie. "Toward an Experimental Ecology of Human Development," American Psychologist, July, 1977.
- Bruner, Jerome S. The Process of Education, Cambridge: Harvard University Press, 1960.
- Callahan, Raymond. Education and the Cult of Efficiency, Chicago: University of Chicago Press, 1964.
- Doll, William E. Jr. "A Structural View of Curriculum," Theory into Practice, December, 1979.
- Doll, William E. Jr. "Curriculum and Change," Journal of Curriculum Theorizing, Spring, 1983.
- Eisner, Elliot W. Cognition and Curriculum, New York: Longman, 1982.
- Goodlad, John I. "An Ecological View of Accountability," Theory into Practice, December, 1979.
- Kuhn, Thomas S. The Structure of Scientific Revolutions, 2nd edition, Chicago: University of Chicago Press, 1970.
- Piaget, Jean. Biology and Knowledge, Chicago: University of Chicago Press, 1971.
- Piaget, Jean. Adaptation and Intelligence, Chicago: University of Chicago Press, 1971.
- Tyack, David B. The One-Best System, Cambridge: Harvard University Press, 1974.